## AMENDMENTS TO THE CLAIMS

**1**. (Currently Amended) A device for analyzing fluorescent signals emitted from fluorescently labeled material bound to a microarray assay of the type having at least one microspot deposited on a substantially flat surface, the device comprising:

an illuminator for illuminating the fluorescently labeled material at an appropriate wavelength to induce fluorescence;

a detector for detecting fluorescent signals emitted by the fluorescently labeled material;

a signal processor for processing the signals detected;

an optical system having an excitation optical path and a detection optical path, at least a portion of the excitation and detection optical paths being substantially coaxial;

the illuminator comprising a light emitting diode arranged to illuminate the material with incoherent illumination and to simultaneously illuminate all, or a substantial portion of at least one microspot.

**2**. (Previously Presented) A device according to claim **1** further comprising an excitation filter positioned in the excitation optical path to filter out longer wavelengths emitted by the LED before they reach the material to be analyzed.

**3**. (Original) A device according to claim **2** wherein the excitation filter comprises a short band pass interference filter.

**4**. (Original) A device according to claim **1** further comprising an emission filter positioned in the detection optical path to filter out any directly reflected illumination from the material.

**5**. (Original) A device according to claim **1** wherein the substantially flat surface comprises a glass slide.

**6**. (Previously Presented) A device according to claim **1** further comprising a polarizing filter positioned in the excitation optical path and a second polarizing filter positioned in the detection

optical path and orientated at right angles to the first polarizing filter such that the two filters comprise crossed polarizers positioned in the excitation and the detection optical paths respectively.

**7**. (Previously Presented) A device according to claim **1** further comprising a polarizing beam splitter positioned to lie in both the excitation and detection optical paths.

**8**. (Original) A device according to claim **1** wherein the signal processor comprises a phase sensitive detector.

**9**. (Cancelled).

**10**. (Currently Amended) A method of analyzing signals emitted from a fluorescently labeled material, wherein the material is bound to at least one microspot deposited on the substantially flat surface of a microarray, the method comprising the steps of:

providing, along an excitation optical path, incoherent illumination derived from a light emitting diode (LED) at an appropriate wavelength to cause fluorescence from the fluorophore in the at least one microspot;

illuminating simultaneously all or a substantial portion of the at least one microspot with the incoherent illumination;

detecting with an optical detector the fluorescence emitted along a detection optical path by the at least one microspot once the at least one microspot has been illuminated; wherein

at least a portion of the excitation and detection optical paths are substantially coaxial.

**11**. (Cancelled).

**12**. (Cancelled).

**13**. (Previously Presented) A device according to claim **1** further comprising an oscillating electrical source driving the light emitting diode such that the intensity of light from the diode is

modulated in time.

**14**. (Previously Presented) A device according to claim **1** wherein a the fluorescently labeled material is bound to plural microspots, and the microspots are deposited in an array on the substantially flat surface.

**15**. (Previously Presented) A device according to claim **1** wherein the substantially flat surface comprises a plate used for microarray assay or immunoassay type tests.

**16**. (Previously Presented) A device according to claim **1** wherein the light emitting diode illuminates an area at the location of the microspot, the area having a diameter of about 200 microns.

**17**. (Previously Presented) A device according to claim **1** wherein the light emitting diode illuminates an area at the location of the microspot, the area having a diameter between about 50 microns and about 450 microns.

**18**. (Previously Presented) A device according to claim **1**, wherein the diameter of the microspot is about 200 microns.

**19**. (Previously Presented) A device according to claim **1**, wherein the diameter of the microspot is between about 50 microns and about 450 microns.

**20**. (Previously Presented) A device according to claim **1** wherein the signal processor comprises a lock-in amplifier combined with a voltage meter.

**21**. (Previously Presented) A method according to claim **10** further comprising:

modulating the intensity level of the incoherent illumination from the LED; and

processing the signal from the optical detector with phase-sensitive detection instruments.

**22**. (Previously Presented) A method according to claim **10** further comprising:

providing fluorescently labeled material bound to plural microspots, the microspots deposited in an array on a substantially flat surface.

**23**. (Previously Presented) A method according to claim **10** further comprising:

placing an excitation filter in an excitation optical path between the LED and the at least one microspot, the excitation filter substantially preventing longer wavelengths emitted by the LED from reaching the at least one microspot.

**24**. (Previously Presented) A method according to claim **10** further comprising:

placing a short band pass interference filter between the LED and the at least one microspot.

**25**. (Previously Presented) A method according to claim **10** further comprising:

placing an emission filter in a detection optical path between the at least one microspot and the optical detector, the emission filter substantially preventing any illumination directly reflected from the sample from reaching the detector.

**26**. (Previously Presented) A method according to claim **10** further comprising:

placing a polarizing filter in an excitation optical path between the LED and the at least one microspot; and

placing a second polarizing filter in a detection optical path between the sample and the detector, the second polarizing filter optically orientated substantially 90 degrees to the first polarizing filter such that the two filters comprise crossed polarizers positioned in the excitation and the detection optical paths.

**27**. (Previously Presented) A method according to claim **10** further comprising:

placing a polarizing beam splitter at a location having coincidence of an excitation optical path between the LED and the at least one microspot and a detection optical path between the at least one microspot and the detector.

**28**. (New) A method according to claim **10**, wherein a dichroic beam splitter is located in the

excitation and detection optical paths.

**29**. (New) A method according to claim **1**, further including a dichroic beam splitter located in the excitation and detection optical paths.